

CLAIMS

1. A packet-relay unit comprising:

a first network interface unit connected to first communication equipment
5 through a first transmission medium;

a second network interface unit connected to second communication
equipment through a second transmission medium; and

a function-setting switch operable to set a quality guarantee to packets fed into
said first network interface unit from the first communication equipment,

10 wherein said second network interface unit includes:

a classifying unit operable to classify the packets in accordance with settings
of said function-setting switch;

a priority control unit operable to provide priority control over the packets
such that the packets outputted from said second network interface unit are
15 preferentially treated at a communication zone between said second network interface
unit and the second communication equipment; and

a transceiving unit operable to perform packet transmitting and receiving
through the second transmission medium,

20 wherein when said function-setting switch is set to render the quality
guarantee operative, said classifying unit transfers the packets from said first network
interface unit to said priority control unit, and said priority control unit provides the
priority control over the packets transferred from said classifying unit, whereby the
packets subjected to the priority control are transferred to said transceiving unit from
said priority control unit, and

25 wherein when said function-setting switch is set to render the quality
guarantee inoperative, said classifying unit transfers the packets from said first network
interface unit to said transceiving unit.

2. A packet-relay unit as defined in claim 1, wherein the first transmission medium differs from the second transmission medium.

3. A packet-relay unit as defined in claim 1, wherein the first transmission medium is a hardwired medium, but the second transmission medium is a wireless medium.

4. A packet-relay unit as defined in claim 1, wherein the first transmission medium is a hardwired medium, but the second transmission medium is a balanced transmission channel for use in power line communication.

5. A packet-relay unit as defined in claim 1, wherein said function-setting switch performs three-staged settings of the quality guarantee to the packets from said first network interface unit;

wherein when said function-setting switch performs a first-staged setting of the quality guarantee, said classifying unit transfers the packets from said first network interface to said priority control unit, and said priority control unit provides the priority control over the packets transferred from said classifying unit, whereby the packets subjected to the priority control are transferred to said transceiving unit from said priority control unit,

wherein when said function-setting switch performs a second-staged setting of the quality guarantee, said classifying unit transfers, to said priority control unit, a packet that satisfies a predetermined classifying condition among the packets from said first network interface unit, but transfers remnants of the packets from said first network interface unit to said transceiving unit, and said priority control unit provides the priority control over the packet that is transferred from said classifying unit and that satisfies the predetermined classifying condition, whereby the packet subjected to the priority control is transferred to said transceiving unit from said priority control unit, and

wherein when said function-setting switch performs a third-staged setting of

the quality guarantee, said classifying unit transfers the packets from said first network interface unit to said transceiving unit.

6. A packet-relay unit as defined in claim 1, further comprising:
a priority control-setting switch,

5 wherein said priority control unit provides a different type of priority control over the packets from said first network interface unit in accordance with each setting of said priority control-setting switch.

7. A packet-relay unit as defined in claim 6, wherein said priority control-setting switch is set to allow said priority control unit to perform at least one of
10 back-off setting, encoding rate setting, communication mode selection, and acknowledgement signal selection, by way of the priority control to be provided by said priority control unit over the packets from said first network interface unit.

8. A packet-relay unit as defined in claim 1, wherein said function-setting switch is a physical switch disposed at a position where appearance of said
15 function-setting switch is viewable.

9. A packet-relay unit as defined in claim 6, wherein said priority control-setting switch is a physical switch disposed at a position where appearance of said priority control-setting switch is viewable.

10. A packet-relay unit comprising:
20 a first network interface unit connected to first communication equipment through a first transmission medium;

a second network interface unit connected to second communication equipment through a second transmission medium;

a first switch operable to set a quality guarantee to packets fed into said first
25 network interface unit from the first communication equipment; and

a marking unit operable to set priority to the packets from said first network interface unit in accordance with settings of said first switch, whereby the packets

having the priority set thereto are transferred to said second network interface unit from said marking unit,

wherein when said first switch is set to render the quality guarantee operative, said marking unit sets increased priority to the packets from said first network interface unit,

wherein when said first switch is set to render the quality guarantee inoperative, said marking unit sets reduced priority to the packets from said first network interface unit.

11. A packet-relay unit as defined in claim 10, wherein said second network interface unit including:

a classifying unit operable to classify the packets in accordance with the priority set by said marking unit;

a priority control unit operable to provide priority control over the packets such that the packets outputted from said second network interface unit are preferentially treated at a communication zone between said second network interface unit and the second communication equipment; and

a transceiving unit operable to perform packet transmitting and receiving through the second transmission medium,

wherein when said first switch is set to render the quality guarantee operative, said marking unit sets increased priority to the packets from said first network interface unit, whereby the packets having the increased priority set thereto are transferred to said classifying unit from said marking unit,

wherein when said first switch is set to render the quality guarantee inoperative, said marking unit sets reduced priority to the packets from said first network interface unit, whereby the packets having the reduced priority set thereto are transferred to said classifying unit from said marking unit,

wherein said classifying unit transfers the packets having the increased

priority set thereto to said priority control unit, but transfers remnants of the packets from said first network interface unit to said transceiving unit, and

wherein said priority control unit provides the priority control over the packets that are transferred from said classifying unit and that have the increased priority set to the packets, whereby the packets subjected to the priority control are transferred to said
5 transceiving unit from said priority control unit.

12. A packet-relay unit as defined in claim 11, wherein said first switch performs three-stage settings of the quality guarantee to the packets from said first network interface unit,

10 wherein when said first switch performs a first-staged setting of the quality guarantee, said marking unit sets increased priority to the packets from the first network interface unit, whereby the packets having the increased priority set thereto are transferred to said classifying unit from said marking unit,

wherein when said first switch performs a second-staged setting of the quality
15 guarantee, said marking unit sets increased priority to a packet that satisfies a predetermined classifying condition among the packets from said first network interface unit, whereby the packet having the increased priority set thereto is transferred to said classifying unit from said marking unit, but said marking unit sets reduced priority to remnants of the packets from said first network interface unit,
20 whereby the remnants having the reduced priority set thereto are transferred to said classifying unit from said marking unit, and

wherein when said first switch performs a third-staged setting of the quality guarantee, said marking unit sets reduced priority to the packets from said first network interface unit, whereby the packets having the reduced priority set thereto are
25 transferred to said classifying unit from said marking unit.

13. A packet-relay unit as defined in claim 12, further comprising:

a second switch operable to set the classifying condition for use in packet

classification,

wherein when said first switch performs the second-staged setting of the quality guarantee, said marking unit classifies the packets from said first network interface unit in accordance with the classifying condition set by said second switch.

- 5 14. A packet-relay unit as defined in claim 13, wherein said second switch sets the classifying condition based on at least one of a DSCP, a TOS, a VLAN priority bit, a MAC address, an IP address, a port number, a protocol number, and a flow label.